REPAIR PARTS CATALOG FOR SUNNEN® COMPUTERIZED VERTICAL HONING MACHINE

MODEL:

CK-21

THIS CATALOG COVERS THE ABOVE MODEL BETWEEN SERIAL NO. 1286 & 1291.

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CE

SUNNEN® PRODUCTS COMPANY
7910 MANCHESTER AVENUE • ST. LOUIS, MO 63143, U.S.A. • PHONE: 314-781-2100

X-CK-2125B

Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow instructions for operation of equipment.

INTRODUCTION

Illustrations show all major components in exploded detail. Item numbers on each illustration are keyed to the corresponding parts list, providing a descriptive identification of each part.

The parts lists include assemblies as well as detail parts. An item listed without a part number can be obtained as a component of the complete assembly of which it is a part.

Standard hardware items are listed with complete descriptions, such as Item 29 below. **These may be purchased at your local hardware store,** but it is important to replace an item with one having the same dimensions as the original. In some places brand names and part numbers are shown. These may change depending upon availability.

Sunnen® Products Company reserves the right to make changes, without notice, to materials, specifications, colors, designs and accessories included with units.

HOW TO ORDER

When ordering replacement parts be sure to include the following information to ensure prompt shipment of correct parts:

1. The part number and description of each part desired, obtained from this parts catalog.

2. The quantity of each part desired.

3. The voltage, frequency and phase, when ordering electrical parts.

4. The model and serial number of the machine, obtained from the name plate, where there is any question concerning a part.

HOW TO USE THIS PARTS LIST

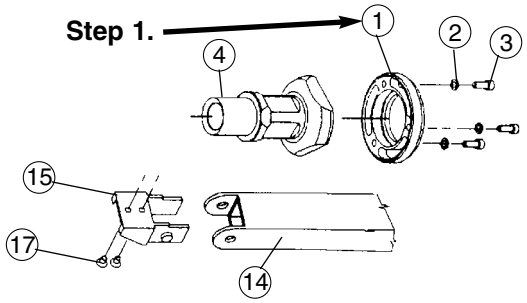
Step 1. – Locate desired part on illustration. Note item number.

Step 2. – Locate item number in the parts list.

Step 3. – If the item has a part number listed, order by part number and the description. A part number in light face type indicates that it is a component of the last preceding part number in bold face type.

Step 4. – If no number is listed, order the part number of the unit of which the desired part is a component. **ORDER ONLY BY PART NUMBER AND DESCRIPTION – NOT** by item number.

NOTE: In this manual, parts may be followed by "(For CE Machines)" or "(For Non-CE Machines)" to denote domestic machines from exported machines. The CE version is constructed to meet the requirements of the European market, and is available to any customer.



ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**MVH-4499A**	**1**	**....Spindle Cap** *includes*
2	PHSM-405	3	.....Screw (M6 x 1 x 16 SHCS)
3	PHW-354	3	.....Washer (M6)
4	**MVH-4422**	**1**	**....Inner Spindle Nose**
14	**PEM-870A**	**1**	**....Cable Carrier** *includes*
15	PEM-871	1	.....Cable Carrier Bracket
16	PEM872	1	.....Cable Carrier Bracket
17	**PHSM-600**	**1**	**....Screw** (M3 x 0,5 x 5mm FHCS)

Step 2. → item 1
Step 3. → item 2
Step 4. → items 15 and 16

GENERAL INFORMATION

The SUNNEN® equipment has been designed and engineered for a wide variety of parts within the capacity and limitation of the equipment. With proper care and maintenance this equipment will give years of service.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY AND THOROUGHLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THIS EQUIPMENT.

IMPORTANT: Read any supplemental instructions BEFORE installing this equipment. These supplemental instructions give you important information to assist you with the planning and installation of your Sunnen equipment.

Sunnen Technical Service Department is available to provide telephone assistance for installation, programming, & troubleshooting of your Sunnen® equipment. All support is available during normal business hours, 8:00 AM to 4:30 PM Central Time. Emergency breakdown support is available on a 24 hour / 7 day basis.

Review all literature provided with your Sunnen equipment. This literature provides valuable information for proper installation, operation, and maintenance of your equipment. Troubleshooting information can also be found within the Instructions. If you cannot find what you need, call for technical support.

Where applicable, programming information for your Sunnen equipment is also included. Most answers can be found in the literature packaged with your equipment.

Help us help you. When ordering parts, requesting information, or technical assistance about your equipment, please have the following information available:

- Have ALL MANUALS on hand. The Customer Services Representative or Technician will refer to it.
- Have Model Number and Serial Number printed on your equipment Specification Nameplate.
- Where Applicable: Have Drive model and all nameplate data. Motor type, brand, and all nameplate data.

For Troubleshooting, additional information may be required:

- Power distribution information (type - delta, wye, power factor correction; other major switching devices used, voltage fluctuations)
- Installation Wiring (separation of power & control wire; wire type/class used, distance between drive and motor, grounding).
- Use of any optional devices/equipment between the Drive & motor (output chokes, etc.).

For fast service on your orders call:

Sunnen Automotive Customer Service toll free at: 1-800-772-2878

Sunnen Industrial Customer Service toll free at: 1-800-325-3670

Customers outside the USA, contact your local authorized Sunnen Distributor.

Additional information available at: http://www.sunnen.com or e-mail: sunnen@sunnen.com

NOTE: Sunnen reserves the right to change or revise specifications and product design in connection with any feature of our products contained herein. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment, supplies or accessories previously sold. Information contained herein is considered to be accurate based on available information at the time of printing. Should any discrepancy of information arise, Sunnen recommends that user verify the discrepancy with Sunnen before proceeding.

ESD PREVENTION REVIEW

Let's review the basics of a sound static control system and its effective implementation. First, in the three step plan:

1. Always ground yourself when handling sensitive components or assemblies.
2. Always use a conductive or shielded container during storage or transportation. These materials create a Faraday cage which will isolate the contents from static charges.
3. Open ESD safe containers only at a static safe work station.

At the static safe work station, follow these procedures before beginning any work:

A. Put on your wrist strap or foot grounding devices.

B. Check all grounding cords to make sure they are properly connected to ground, ensuring the effective dissipation of static charges.

C. Make sure that your work surface is clean and clear of unnecessary materials, particularly common plastics.

D. Anti-static bubble wrap has been included for use at the machine when an ESD safe workstation is not available.

You are now properly grounded and ready to begin work. Following these few simple rules and using a little common sense will go a long way toward helping you and your company in the battle against the hazards of static electricity. When you are working with ESD sensitive devices, make sure you:

GROUND

ISOLATE

NEUTRALIZE

SUNNEN® LIMITED PRODUCT WARRANTY

Sunnen® Products Company and its subsidiaries (SPC) warrant that all new SPC honing machines, gaging equipment, tooling, and related equipment will be free of defects in material and/or workmanship for a period of one year from the date of original shipment from SPC.

Upon prompt notification of a defect during the one-year period, SPC will repair, replace, or refund the purchase price, with respect to parts that prove to be defective (as defined above). Any equipment or tooling which is found to be defective from improper use will be returned at the customer's cost or repaired (if possible) at customer's request. Customer shall be charged current rates for all such repair.

Prior to returning any SPC product, an authorization (RMA#) and shipping instructions must be obtained from the Customer Service Department or items sent to SPC will be returned to the customer.

Warranty Limitations and Exclusions This Warranty does not apply to the following:

- Normal maintenance items subject to wear and tear: (belts, fuses, filters, etc).
- Damages resulting from but not limited to:
  - › Shipment to the customer (for items delivered to customer or customer's agent F.O.B., Shipping Point)
  - › Incorrect installation including improper lifting, dropping and/or placement
  - › Incorrect electric power (beyond +/- 10% of rated voltage) including intermittent or random voltage spikes or drops
  - › Incorrect air supply volume and/or pressure and/or contaminated air supply
  - › Electromagnetic or radio frequency interference from surrounding equipment (EMI, RFI)
  - › Storm, lightning, flood or fire damage
  - › Failure to perform regular maintenance as outlined in SPC manuals
  - › Improper machine setup or operation causing a crash to occur
  - › Misapplication of the equipment
  - › Use of non-SPC machines, tooling, abrasive, fixturing, coolant, repair parts, or filtration
  - › Incorrect software installation and/or misuse
  - › Non-authorized customer installed electronics and/or software
  - › Customer modifications to SPC software

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Shipping Damages

Except in the case of F.O.B., Buyer's destination shipments, SPC will not be liable for any settlement claims for obvious and/or concealed shipping damages. The customer bears the responsibility to unpack all shipments immediately and inspect for damage. When obvious and/or concealed damage is found, the customer must immediately notify the carrier's agent to make an inspection and file a claim. The customer should retain the shipping container and packing material.

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Any alteration or reverse engineering of the software is expressly forbidden and is in violation of this agreement.

SPC reserves the right to update the software covered by this agreement at any time without prior notice and any such updates are covered by this agreement.

SAFETY INSTRUCTIONS
READ FIRST

The CK-21, like any machine tool, may be dangerous if used improperly. As a result of our commitment to continual safety improvement, many new safety features have been incorporated into this machine. However, these features cannot protect the operator from all hazards of misuse or abuse of the product. Please read all warnings and instructions before attempting to use this machine.

DO NOT turn power on until all guards and covers are securely in place.

DO NOT remove or defeat any safety device.

Depressing foot pedal with power “ON” can start spindle and stroker motion. Use foot pedal ONLY to start a honing cycle after workpiece is securely fixtured and located on honing tool.

Begin each new setup by depressing Emergency Stop button to clear all previous spindle and stroker speed settings.

NEVER open or remove any machine cover or protective guard with power "ON." Always disconnect power at main enclosure before servicing CK-21.[1]

Always wear eye protection when operating CK-21.

DO NOT attempt any repair or maintenance procedure beyond those described in this book. Contact your Sunnen® Service Representative for repairs not covered in this book.

Manual stroked honing and truing should only be performed by operators trained to use safe manual honing practices. The key for switch to disable stroker and allow manual honing should be kept by a supervisor or skilled honing operator to prevent unauthorized manual honing.

Much of the safety of the honing operation is dependent on how workpiece is fixtured. Several standard fixturing components are available but each is limited to certain types of applications. “Homemade” fixtures are also not uncommon and can be quite effective if designed and used properly. Sometimes it is necessary to clamp workpieces lightly when honing with special fixtures to minimize bore distortion. Likewise, tooling for small diameter honing is inherently fragile. Therefore, ***Always start a new setup with speeds and feed forces that are much lower than recommended to test stability of tooling and fixturing***. After that, speeds and feed forces may be increased slowly to recommended values.

If specially built automation components are added to this system, be sure that safety is not compromised. If necessary, obtain special enlarged work area safety system from Sunnen Products Co.

CE Indicates CE version ONLY.

[1] DO NOT touch electrical components until main input power has been turned off and *CHARGE* lamps are extinguished. WARNING: The capacitors are still charged and can be quite dangerous.

IMPORTANT NOTE

The temperature requirements of the Sunnen CK-21 Computerized Vertical Honing Machine have been established as 35 degrees C (95 degrees F). Above this temperature, an optional cooler will be available to handle temperatures from 35º to 46º C (95º to 115º F). IT IS NOT recommended that the CK-21 be operated at temperatures above 46º C (115º F). Sunnen Products Company warrants the CK-21 for operating environments up to 35ºC (95º F). For operating environments of 35º to 46º C (95º to 115º F) the warranty only applies if the optional cooler is installed on the Machine. No warranty coverage is offered for operating environments above 46º C (115º F).

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SECTION I - BASIC MACHINE

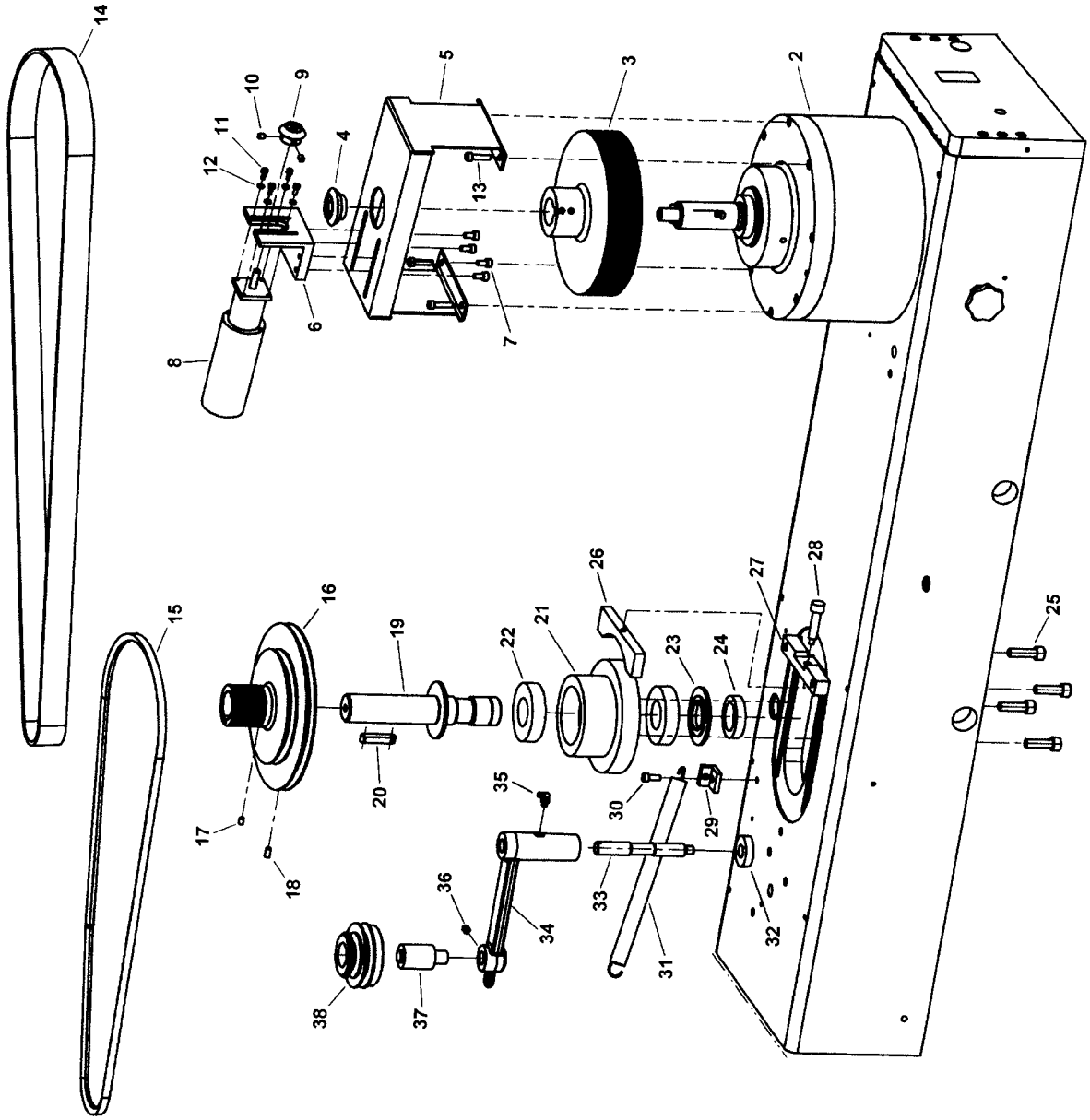

FIGURE A – OVERARM, UPPER

PARTS LIST COVERING FIGURE "A"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5301**	**1**	**....Drive Arm**
2	**CK-5335A**	**1**	**....Transmission**
3	**CK-5327A**	**1**	**....Drive Pulley**
4	**PHM-125A**	**1**	**....Bevel Gear**
N/S	**PHSM-538**	**2**	**....Setscrew** (M6 x 1 x 8 FPSS w/Nylok Patch)
-	**CK-5320**	**1**	**....Feed Assembly** *includes*
5	CK-5321	1	.....Motor Mount Bracket
6	CK-5326	1	.....Motor Bracket
7	PHSM-535	4	.....Screw (M6 x 1 x 12 SHCP)
8	CK-5678A	1	.....Feed Motor
9	PHM-124A	1	.....Bevel Gear
10	PHSM-538	2	.....Setscrew (M6 x 1 x 8 FPSS w/Nylok Patch)
11	PHS-696	4	.....Screw (M4 x .7 x 10 SHCP)
12	PHWM-528	4	.....Washer (.285 x 1/2 x .049)
N/S	PHW-106	4	.....Washer (4,1 x 7,6 x 8,9 mm)
N/S	CK-5836A	1	.....Feed Motor Cable
N/S	CK-5848A	1	.....Feed Motor Cable
13	PHSM-425	4	.....Screw (M6 x 1 x 25 SHCP)
14	PDB-330	1	.....Belt
15	PDB-329	1	.....Belt
-	**CK-5400**	**1**	**....Intermediate Pully Assembly** *includes*
16	CK-5402A	1	.....Intermediate Pulley
17	PHSM-538	1	.....Setscrew (M6 x 1 x 8 FPSS w/Nylok Patch)
18	- - -	1	.....Setscrew (M6 x 1 x 12 FPSS)
19	CK-5401	1	.....Intermediate Shaft
20	PHKM-105A	1	.....Parallel Key
21	CK-5405	1	.....Bearing Housing Assembly
22	PBR-303A	2	.....Bearing (Pkg. of 1)
23	CK-5407	1	.....Thrust Washer
24	PHN-413	1	.....Bearing Retaining Nut
25	PHSM-449	4	.....Screw (M10 x 1.5 x 35 SHCS)
26	CK-5404	1	.....Tension Block
27	CK-5403	1	.....Tensioner
28	CK-5412	1	.....Tension Screw
29	CK-5408	1	.....Spring Anchor
30	PHSM-535	1	.....Screw (M6 x 1 x 16 SHCS)
31	PSP-329A	1	.....Extension Spring
32	CK-5432	1	.....Idler Spacer
33	CK-5409	1	.....Pivot Pin
-	CK-5410	1	.....Inside Idler Assembly *includes*
34	CV-201	1	.....Idler Arm
35	PPPM-447	1	.....Grease Fitting
36	PHSM-603	1	.....Setscrew (M5 x .8 x 8 CPSS)
-	- - -	1	.....Inside Idler Pulley Assembly *includes*
37	CK-5417A	1	.....Bearing
38	CK-5416A	1	.....Idler Pulley
N/S	**CK-5479**	**1**	**....Rear Cover Bracket**
N/S	**CK-5851**	**1**	**....Cover Spindle Overarm**
N/S	**CK-5787**	**1**	**....U-Joint Cover**

N/S indicates Not Shown

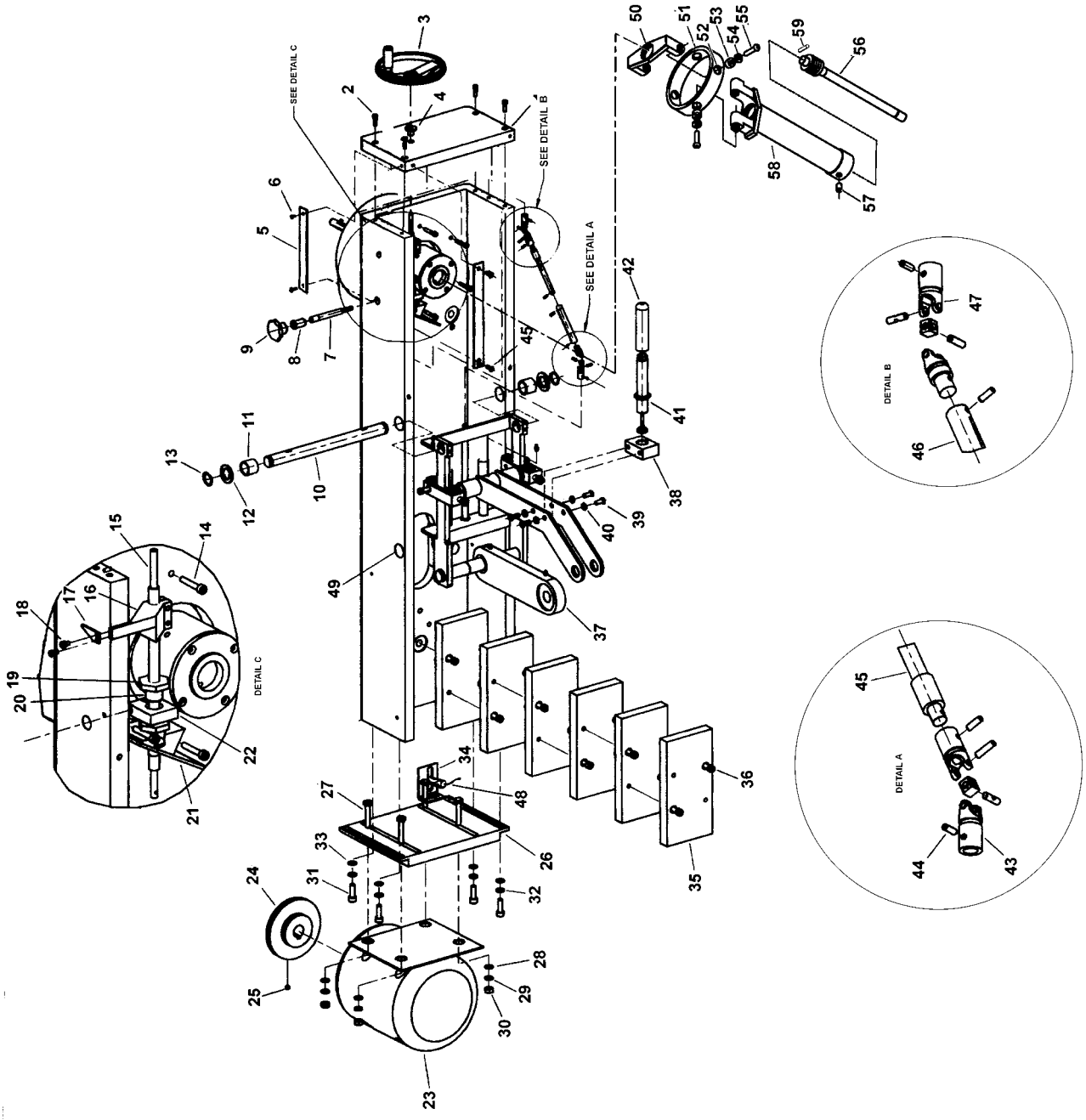

FIGURE B – OVERARM, LOWER

PARTS LIST COVERING FIGURE "B"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CV-5313**	**1**	**....Drive Arm Front Plate**
2	**PHSM-607**	**4**	**....Screw** (M6 x 1 x 20 SHCS)
-	**CK-5429A**	**1**	**....Handwheel Assembly** *includes*
3	CK-5429	1	.....Handwheel
4	CK-5619	1	.....Spacer
5	**CK-5302A**	**1**	**....Stroke Scale**
6	**PHSM-623**	**2**	**....Screw** (M4 x .7 x 8 BHCS)
7	**CK-5863A**	**1**	**....Screw** (Special)
8	**CK-5866A**	**1**	**....Bushing**
9	**PHM-390A**	**1**	**....Plastic Knob**
10	**CK-5471**	**1**	**....Stroker Shaft**
11	**PBR-10-A**	**2**	**....Bearing** (Pkg. of 1)
12	**CK-5407**	**2**	**....Thrust Washer**
13	**PHRM-304**	**2**	**....Retaining Ring** (25mm)
14	**PHSM-607**	**6**	**....Screw** (M6 x 1 x 35 SHCS)
15	**CK-5422**	**1**	**....Indicator Shaft**
16	**CK-5423**	**1**	**....Indicator Traveler**
17	**CK-5438A**	**1**	**....Pointer**
18	**PHSM-487**	**2**	**....Screw** (M4 x .7 x 6 SHCS)
19	**CK-5861**	**2**	**....Nut** (M4)
20	**CK-5864A**	**1**	**....Bushing**
21	**CK-5435**	**1**	**....Stroke Adj. Bracket Assembly**
22	**CK-5862**	**1**	**....Clamp Block**
23	**PMO-929A**	**1**	**....Motor**
24	**CK-5419A**	**1**	**....Motor Pulley**
25	**PHSM-603**	**1**	**....Setscrew** (M8 x 1.25 x 6 FPSS)
26	**CK-5418**	**1**	**....Motor Mount Plate**
27	**PHSM-496**	**4**	**....Screw** (M10 x 1.5 x 55 HHCS)
28	**- - -**	**4**	**....Washer**
39	**PHWM-521**	**4**	**....Lockwasher**
30	**PHNM-426**	**4**	**....Nut** (M10)
31	**PHSM-485**	**4**	**....Screw** (M10 x 1.5 x 30 SHCS)
32	**PHWM-407**	**4**	**....Lockwasher**
33	**PHWM-395**	**4**	**....Washer**
34	**CK-5414**	**1**	**....Proximity Switch Bracket**
35	**CV-1223**	**6**	**....Counterweight**
36	**PHS-588**	**12**	**....Screw** (3/8 x 16 x 1.5 SHCS)
37		**1**	**....Upper Stroker Assembly** *(See Fig. C)*
38	**CK-5923**	**1**	**....Shock Block**
39	**PHSM-459**	**4**	**....Screw** (M8 x 1.25 x 20 BHCS)
40	**PHWM-509**	**4**	**....Washer**
41	**CK-5906A**	**1**	**....Shock Absorber**
42	**CK-5913A**	**1**	**....Shock Cover**
43	**CK-5428A**	**1**	**....Male U-Joint**
44	**PHSM-502**	**6**	**....Screw** (M3 x .5 x 16 SHCS)
45	**CK-5427**	**1**	**....Feed U-Joint Slide**
46	**CK-5424**	**1**	**....Stroke Adjust Tube**
47	**CK-5426A**	**1**	**....Universal Joint**
48	**CK-5413A**	**1**	**....Speed Sensing Prox. Switch**

N/S indicates Not Shown

(Parts continued on next page)

PARTS LIST COVERING FIGURE "D"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
49	**PBR-10-A**	**2**	**....Bearing** (Pkg. of 1)
N/S	**- - -**	**1**	**....Lift Rod**
50	**CK-5329**	**1**	**....Drive Yoke**
51	**CV-1825A**	**1**	**....Upper Universal Ring Assembly**
52	**PBR-23A**	**4**	**....Needle Bearing** (Pkg. of 4)
53	**PBR-24A**	**4**	**....Inner Race** (Pkg. of 4)
54	**- - -**	**4**	**....Washer** (Special)
55	**PHS-522**	**4**	**....Screws** (5/16-24 x 7/8 BHCS)
56	**CK-6050**	**1**	**....Feed Tube Ass.** (Upper)
57	**CV-1823A**	**1**	**....Locking Screw**
58	**CV-1830A**	**1**	**....Drive Tube Ass**
59	**PHP-448**	**1**	**....Roll Pin.**
60	**PHWM-533**	**4**	**....Washer**
61	**PHNM-400**	**4**	**....Nut**
62	**PHSM-502**	**6**	**....Spring Pin**

N/S indicates Not Shown

NOTES

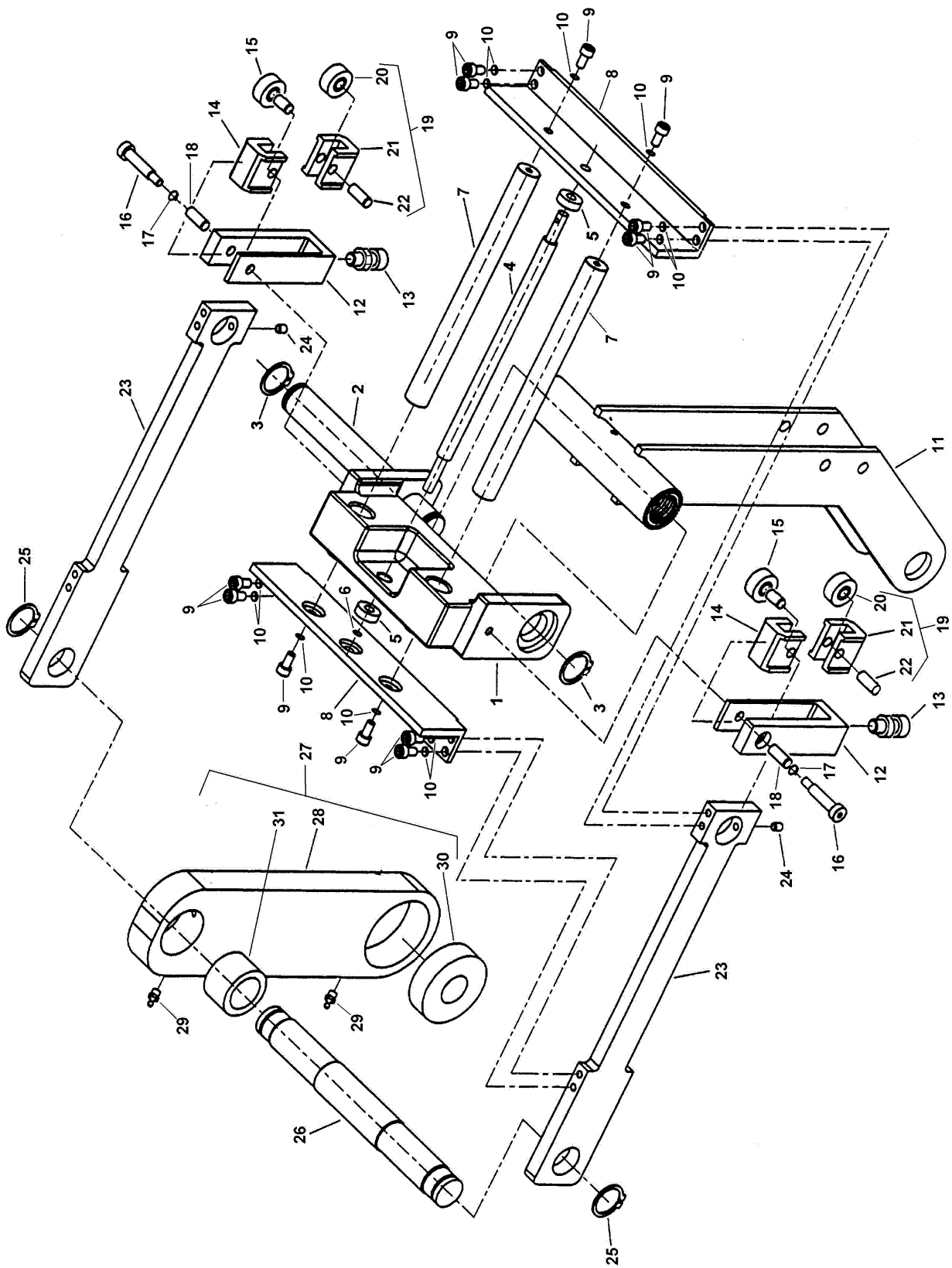

FIGURE C – UPPER STROKER ASSEMBLY

PARTS LIST COVERING FIGURE "C"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5441**	**1**	**....Stroke Adjustment Carriage**
2	**CK-5442**	**1**	**....Pivot Bar**
3	**PHRM-304**	**2**	**....Retaining Ring** (25mm)
4	**CK-5461**	**1**	**....Stroke Screw**
5	**PBR-66A**	**2**	**....Ball Thrust Bearing** (Pkg. of 1**)**
6	**PHW-391**	**1**	**....Curved Spring Washer**
7	**CK-5458**	**2**	**....Stiffness Strut**
8	**CK-5459**	**2**	**....Guide Rail**
9	**PHSM-535**	**12**	**....Screw** (M6 x 1 x 12 SHCS)
10	**PHWM-509**	**12**	**....Lockwasher** (M6)
11	**CK-5445**	**1**	**....Upright Assembly**
12	**CK-5452**	**2**	**....Fixed Roller Housing**
13	**PHSM-502**	**2**	**....Screw** (M10 x 1.5 x 25 SHCS)
14	**CK-5463**	**2**	**....Roller Housing**
15	**PBR-233A**	**2**	**....Track Roller Bearing** (Pkg. of 1)
16	**PHSM-673**	**2**	**....Screw** (M8 x 1.25 x 40 BHCS)
17	**PHWM-407**	**2**	**....Lockwasher**
18	**CK-5444**	**2**	**....Spacer Pivot Bearing**
19	**CK-5455**	**2**	**....Moveable Roller Housing** (Pkg. of 1) *includes*
20	PBR-233	1	.....Track Roller Bearing
21	CK-5455	1	.....Roller Housing
22	PHPM-551	1	.....Dowel Pin
23	**CK-5457**	**2**	**....Rocker Arm**
24	**PHSM-538**	**2**	**....Setscrew** (M6 x 1 x 8 FPSS)
25	**PBRM-304**	**2**	**....Retaining Ring** (25mm)
26	**CK-5451**	**2**	**....Wrist Pin**
27	**CK-5465A**	**1**	**....Stroke Rod Assembly** *includes*
28	CK-5465	1	.....Connecting Rod
29	PPPM-411	2	.....Grease Fitting
30	PBR-235A	1	.....Spherical Roller Bearing
31	PBR-234A	1	.....Bearing

N/S indicates Not Shown

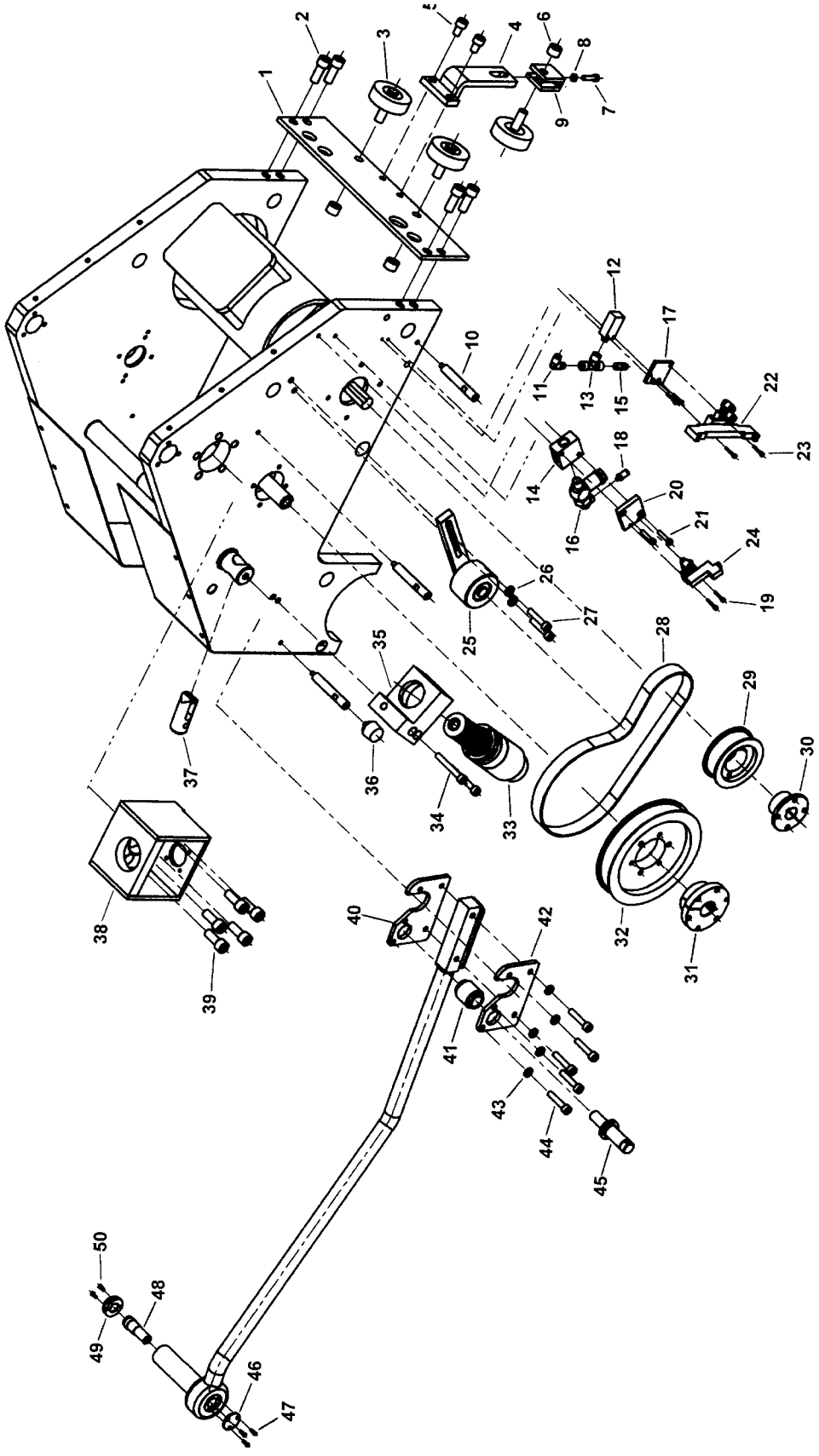

FIGURE D – "A" FRAME ASSEMBLY, EXTERNAL COMPONENTS

PARTS LIST COVERING FIGURE "D"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5521**	**1**	**....Rear Bracket**
2	**HL-639**	**4**	**....Screw** (M12 x 1.75 x 30 SHCS)
3	**CV-770A**	**3**	**....Carriage Roller & Bearing Assembly** (Pkg. of 1)
4	**CK-5522**	**1**	**....Hold Down Strap**
5	**PHSM-447**	**2**	**....Screw** (M10 x 1.5 x 16 SHCS)
6	**PHN-103**	**3**	**....Clamp Bolt Washer**
7	**PHSM-607**	**1**	**....Screw** (M6 x 1 x 25 SHCS)
8	**PHN-200**	**1**	**....Jam Nut** (M6)
9	**CK-5524**	**1**	**....Clevis**
10	**CK-5532**	**3**	**....Stand Off**
11	**PPP-439A**	**1**	**....Elbow**
12	**PES-536A**	**1**	**....Pressure Switch**
13	**PPPM-440A**	**1**	**....Female Tee**
14	**PPPM-444A**	**1**	**....Distribution Block**
15	**PPP-440A**	**1**	**....Straight Fitting**
16	**MBC-859A**	**1**	**....Blocking Valve**
17	**CK-5914A**	**1**	**....Valve Adapter**
18	**PPP-370A**	**1**	**....Adapter**
19	**PHSM-502**	**4**	**....Screw** (M3 x .5 x 16 SHCS)
20	**CK-5927**	**1**	**....Valve Bracket**
21	**PHSM-415**	**2**	**....Screw** (M5 x .8 x 25 Soc. Hd Cap)
22	**CK-5907A**	**1**	**....Valve Assembly**
23	**PHSM-630**	**2**	**....Screw** (M3 x .5 x 20 SHCS)
24	**CK-5908A**	**1**	**....Valve Assembly**
25	**CK-5525A**	**1**	**....Stroke Drive Tensioner Assembly**
26	**PHWM-407**	**2**	**....Washer**
N/S	**CK-1828**	**2**	**....Washer**
27	**PHSM-444**	**2**	**....Screw** (M8 x 1.25 x 40 SHCS)
28	**PDB-209A**	**1**	**....Timing Belt**
29	**PHM-214A**	**1**	**....Timing Pulley**
30	**PHM-215A**	**1**	**....Timing Pulley Bushing**
31	**PHM-217A**	**1**	**....Timing Pulley Bushing**
32	**PHW-216A**	**1**	**....Timing Pulley**
33	**CK-5644A**	**1**	**....Shock Absorber**
34	**PHSM-537**	**2**	**....Screw** (M8 x 1.25 x 60 SHCS)
35	**CK-5901**	**1**	**....Shock Stop Block**
36	**CK-1084A**	**1**	**....Bumper**
37	**CK-5973**	**1**	**....Lift Pin**
38	**CK-5680**	**1**	**....Pivot Block Assembly**
39	**HL-639**	**5**	**....Screw** (M12 x 1.75 x 30 SHCS)
40	**CK-5917**	**1**	**....Inner Lift Arm Plate**
41	**CK-5919A**	**1**	**....Bushing**
42	**CK-5918**	**1**	**....Outer Lift Arm Plate**
43	**PHWM-407**	**6**	**....Lockwasher**
44	**PHSM-444**	**5**	**....Screw** (M8 x 1.25 x 40 SHCS)
45	**CK-5921**	**1**	**....Pivot Post**
		1	**....Air Assist Handle Assembly** *includes*
46	CK-6023	1	.....Cover Plate
		3	.....Screw (M3 x .5 x 8 FHCS)
48	PES-550A	1	.....Push Button (Green)
49	CK-6022A	1	.....Switch Cap
50	PHSM-550	2	.....Screw (M3 x .5 x 8 SHCS)
51		1	.....Screw (M12 x 1.75 x 30 SHCS)
52		1	.....Nut (M12)

N/S indicates Not Shown

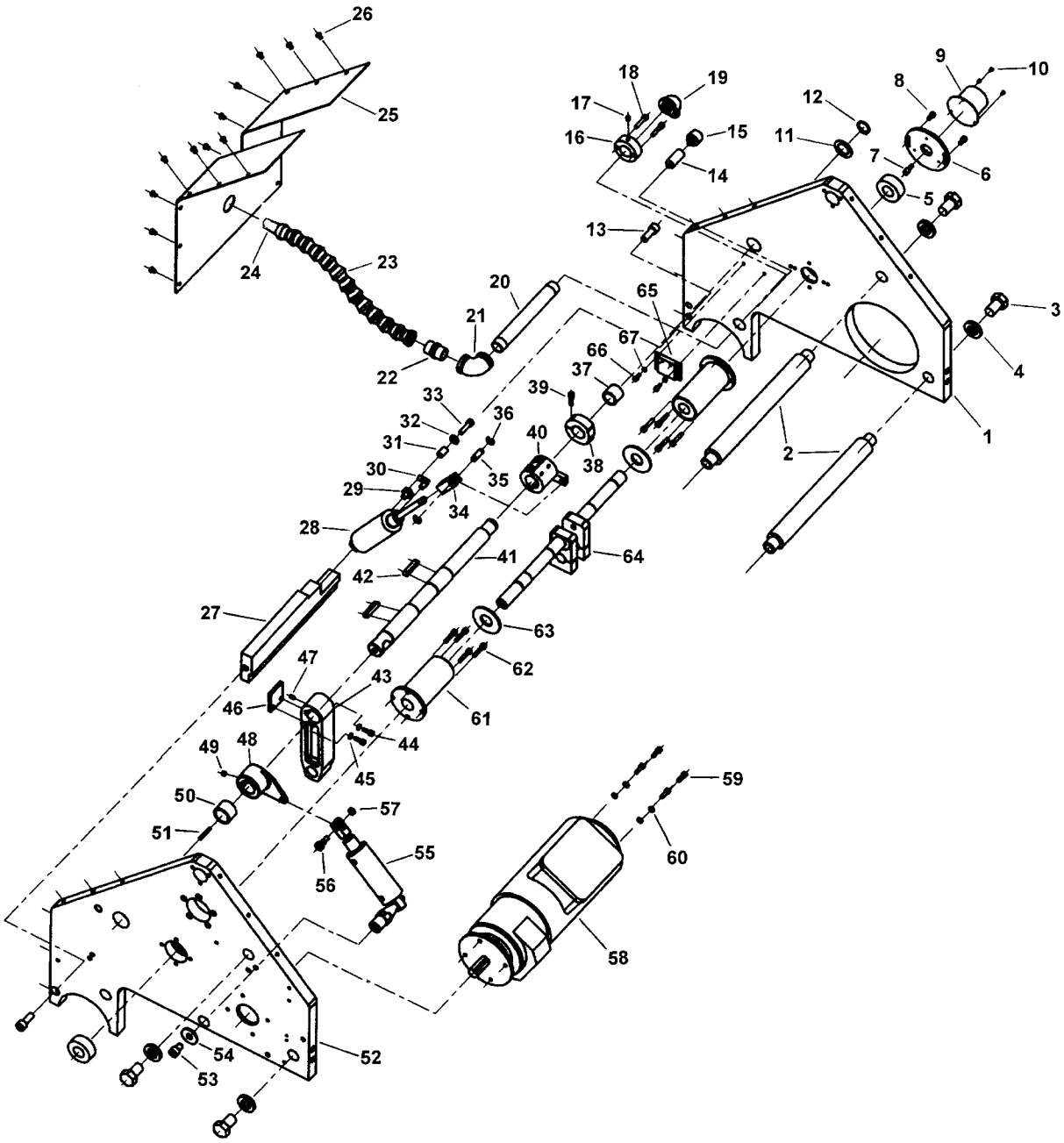

FIGURE E – "A" FRAME ASSEMBLY, INTERNAL COMPONENTS

PARTS LIST COVERING FIGURE "E"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5481**	**1**	**....Left "A" Frame**
2	**CK-5516**	**2**	**....Strut**
3	**PHSM-636**	**4**	**....Screw** (M20 x 2.5 x 50 HHCS)
4	**CK-5518**	**4**	**....Strut Washer**
5	**PBR-104A**	**2**	**....Bearing** (Pkg. of 1)
6	**CK-5529**	**1**	**....Encoder Plate**
7	**CK-5507**	**1**	**....Encoder Drive Pin**
8	**PHSM-535**	**2**	**....Screw** (M6 x 1 x 12 SHCS)
9	**CK-5672A**	**1**	**....Encoder**
10	**PHSM-500**	**3**	**....Screw** (M3 x .5 x 6 PHCS)
11	**PHWM-533**	**1**	**....Washer**
12	**PHRM-304**	**1**	**....Retaining Ring**
13	**HL-639**	**2**	**....Screw** (M12 x 1.75 x 30 SHCS)
14	**CK-5622**	**1**	**....Bumper Standoff**
15	**CK-1084A**	**1**	**....Bumper**
16	**CK-5632**	**1**	**....Coolant Line Hub**
17	**PHSM-596**	**2**	**....Setscrew** (M6 x 1 x 10 CPSS)
18	**PHSM-607**	**2**	**....Screw** (M6 x 1 x 30 SHCS)
19	**PPP-129A**	**1**	**....Elbow Reducing Street**
20	**PPP-492A**	**1**	**....Pipe**
21	**MAN-1079A**	**1**	**....Elbow**
22	**PPP-496A**	**1**	**....Connector**
23	**PPP-494A**	**2**	**....Hose Segment Pack** (Pkg. of 1)
24	**PPP-495A**	**1**	**....Nozzle**
25	**CK-5593**	**1**	**....Cover**
26	**PHSM-508**	**12**	**....Screw** (M6 x 1 x 8 BHCS)
27	**CK-5916**	**1**	**....Front Carriage Adapter Block**
28	**CK-5909A**	**1**	**....Modified Cylinder**
29	**PPP-306A**	**1**	**....Breather**
30	**PPPM-439A**	**1**	**....Elbow Adapter**
31	**CK-5929A**	**1**	**....Pivot Roller**
32	**PHWM-501**	**1**	**....Washer**
33	**PHSM-485**	**1**	**....Screw** (M8 x 1.25 x 30 SHCS)
34	**CK-5928**	**1**	**....Rod Clevis** *includes*
35	- - -	1	.....Pin
36	- - -	2	.....Retaining ring
37	**PBR-10A**	**1**	**....Needle Bearing**
38	**CK-5488A**	**1**	**....Cam**
39	**PHSM-966**	**1**	**....Screw** (M6 x 1 x 25 SHCS)
40	**CK-5910**	**1**	**....Split Collar Assembly**
41	**CK-5486**	**1**	**....Lower Control Shaft**
42	**PHKM-105A**	**2**	**....Parallel Key** (Pkg. of 1)
43	**CK-5496**	**1**	**....Lift Rod**
44	**PHSM-405**	**2**	**....Screw** (M6 x 1 x 16 SHCS)
45	**PHWM-509**	**2**	**....Washer**
46	**CK-5924**	**1**	**....Strike Plate**
47	**PHSM-539**	**2**	**....Setscrew** (M6 x 1 x 10 CPSS)
48	**CK-5490**	**1**	**....OC Bracket Assembly**
49	**PHSM-603**	**1**	**....Setscrew** (M8 x 1.25 x 6 FPSS)

N/S indicates Not Shown

(Parts continued on next page)

PARTS LIST COVERING FIGURE "E"

ITEM NO.	**ORDER BY PART NUMBER**	QTY.	DESCRIPTION
50	**PBR-19A**	**1**	**....Roller Bearing**
51		**1**	**....Setscrew** (M6 x 1 x 35 FPSS)
52	**CK-5482**	**1**	**....Right "A" Frame**
53	**PHSM-484**	**1**	**....Screw** (M12 x 1.75 x 16 SHCS)
54	**PHWM-442**	**1**	**....Washer**
55	**CK-5935A**	**1**	**....Cylinder Assembly**
56	**PHSM-704**	**1**	**....Screw**
57	**PHNM-456**	**1**	**....Nut**
58	**PMO-435A**	**1**	**....Gearmotor with Base** (230 & 460 Volt)
58	**PMO-436A**	**1**	**....Gearmotor with Base** (380/400 Volt)
59	**PHSM-424**	**4**	**....Screw** (M6 x 1 x 20 HHCS)
60	**PHWM-509**	**4**	**....Washer**
61	**CK-5505A**	**2**	**....Main Bearing Assembly** (Pkg. of 1)
62	**PHSM-607**	**8**	**....Screw** (M6 x 1 x 30 SHCS)
63	**PHW-382**	**2**	**....Washer**
64	**CK-5510A**	**1**	**....Crank Assembly** *includes*
N/S	CK-5511	1	.....Crank End
N/S	CK-5514	1	.....Crank End - Driven
N/S	CK-5517	1	.....Crank Cap
N/S	CK-5512	1	.....Crank Pin
N/S	PHSM-964	1	.....Screw (M6 x 1 x 35 SHCS)
65	**CK-5538**	**1**	**....Switch Mount**
66	**PHSM-401**	**2**	**....Screw** (M5 x .8 x 12 SHCS)
67	**KN-46**	**2**	**....Washer**
N/S	**CRG-868**	**2**	**....Washer**
N/S	**CK-5846A**	**1**	**....Limit Switch Assembly**
N/S	**PHSM-573**	**2**	**....Screw**

N/S indicates Not Shown

NOTES

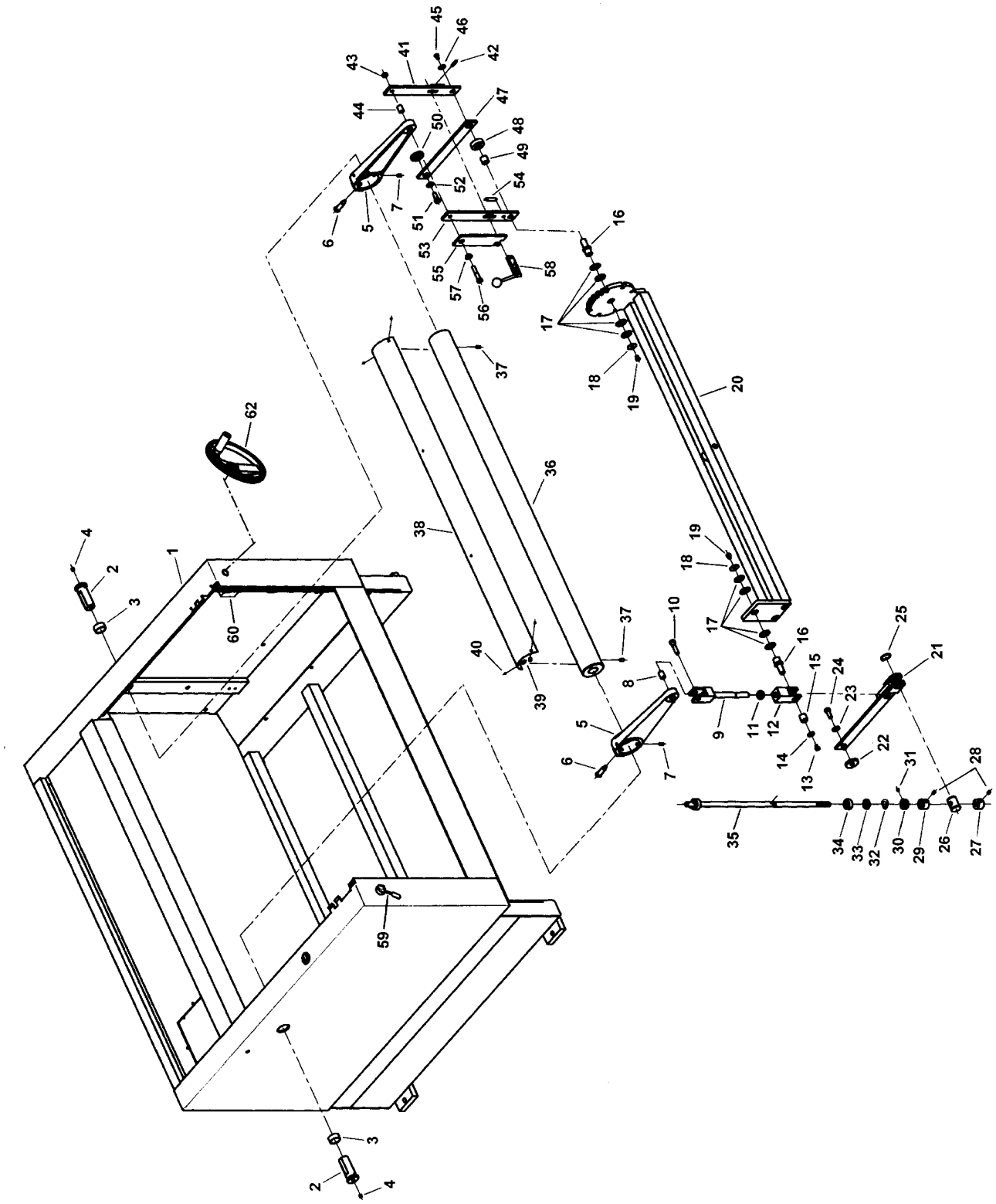

FIGURE F – TRAVERSE SHAFT & ELEVATING CRADLE

PARTS LIST COVERING FIGURE "F"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5540**	**1**	**....Base Assembly**
2	**CK-1092**	**2**	**....Pivot Pin**
3	**PBR-242A**	**2**	**....Teflon Bearing *(Pkg. of 1)***
4	**- - -**	**2**	**....Pipe Plug**
5	**CK-5612**	**2**	**....Elevating Arm**
6	**CK-1071**	**2**	**....Setscrew** (5/8-11UNC x 2)
7	**PHSM-816**	**2**	**....Setscrew** (M10 x 1.5 x 16 FPSS)
8	**CK-1147A**	**1**	**....Upper Bushing**
9	**CK-1140**	**1**	**....Adjusting Link**
10	**PHS-515**	**1**	**....Screw** (1/2-20UNF x 2 HHCS)
11	**PHN-109**	**1**	**....Nut** (3/4-16UNF Jam)
12	**CK-1143**	**1**	**....Adjusting Clevis**
13	**PHS-1046**	**1**	**....Screw** (3/8-24UNF x .5 HHCS)
14	**PHW-395**	**1**	**....Frame Stud Washer** (3/8 Flat)
15	**CK-1149A**	**1**	**....Lower Bushing**
16	**CK-1148A**	**2**	**....Pivot Stud** (Pkg. of 1)
17	**PHW-105**	**8**	**....Washer** (1" Flat)
18	**CK-1153**	**2**	**....Washer** (3/8 Flat)
19	**PHS-1046**	**2**	**....Screw** (3/8-24UNF x 1 HHCS)
20	**CK-5615**	**1**	**....Cradel Assembly**
21	**CK-1130**	**1**	**....Horizontal Link Assembly**
22	**CK-1137A**	**1**	**....Shoulder Bushing**
23	**MAN-1183**	**1**	**....Washer** (1/2 Flat)
24	**PHS-527**	**1**	**....Bolt** (1/2-20UNF x 1.25 HHCS)
25	**PHR-313**	**1**	**....Retaining Ring**
26	**CK-1134**	**1**	**....Elevating Adjustment Nut**
27	**CK-1129**	**1**	**....Stop Collar**
28	**PHS-104**	**2**	**....Setscrew** (3/8-16UNC x .5)
29	**CK-1128**	**1**	**....Stop Collar**
30	**KN-976**	**1**	**....Collar**
31	**PHS-116**	**1**	**....Setscrew** (5/16-18UNC x .375 CPSS)
32	**CK-1127**	**1**	**....Washer** (3/4 Spring)
33	**CK-727**	**1**	**....Washer** (3/4 Flat)
34	**PBR-21A**	**2**	**....Thrust Bearing** (Pkg. of 1)
N/S	**CK-5691A**	**1**	**....Crank Handle**
35	**CK-1120**	**1**	**....Elevating Screw Assembly**
36	**CK-5613**	**1**	**....Traverse Shaft**
37	**PHSM-618**	**2**	**....Setscrew** (M10 x 1.5 x 16 FPSS)
38	**CK-5614**	**1**	**....Guard**
39	**CK-5621**	**4**	**....Foot**
40	**PHSM-600**	**4**	**....Screw** (M3 x .5 x 5 FHCS)
41	**CK-1160**	**1**	**....Vertical Link Assembly**
42	**PHP-554**	**1**	**....Groove Pin**
43	**PHN-103**	**1**	**....Nut** (1/2-20UNF)
44	**CK-1147A**	**1**	**....Upper Bushing**
45	**PHS-1046**	**1**	**....Screw** (3/8-24UNF x .5 HHCS)
46	**PHW-395**	**1**	**....Frame Stud Washer** (3/8 Flat)
47	**CK-1154**	**1**	**....Horizontal Link**
48	**CK-1167**	**1**	**....Spacer**
49	**CK-1149A**	**1**	**....Lower Bushing**

N/S indicates Not Shown

(Parts continued on next page)

PARTS LIST COVERING FIGURE "F" cont'd

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
50	**CK-1137A**	**1**	**....Shoulder Bushing**
51	**PHS-1046**	**1**	**....Bolt** (1/2-20UNF x 1.25 HHCS)
52	**PHW-395**	**1**	**....Washer** (1/2 Flat)
53	**CK-1155**	**1**	**....Vertical Link Assembly**
54	**CK-1178A**	**1**	**....Spring**
55	**CK-1151**	**1**	**....Safety Latch**
56	**PHS-669**	**1**	**....Screw** (1/2-20UNF x 2.5 HHCS)
57	**CK-1152A**	**1**	**....Bushing**
58	**CK-1175**	**1**	**....Position Latch**
59	**CK-5643A**	**1**	**....Flow Adjustment Handle**
N/S	**CK-5646A**	**1**	**....Ball Valve**
60	**CK-5847A**	**1**	**....Door Interlock Switch** (Prior to Serial no. 1110)
60	**CK-5508A**	**1**	**....Door Interlock Switch** (Serial no. 1110 to 1159)
60	**CK-5509A**	**1**	**....Door Interlock Switch** (Serial no. 1160 and Up)
61	**CK-5603**	**1**	**....Carriage Sleeve**
62	**CK-5606**	**1**	**....Traverse Handwheel**

N/S indicates Not Shown

NOTES

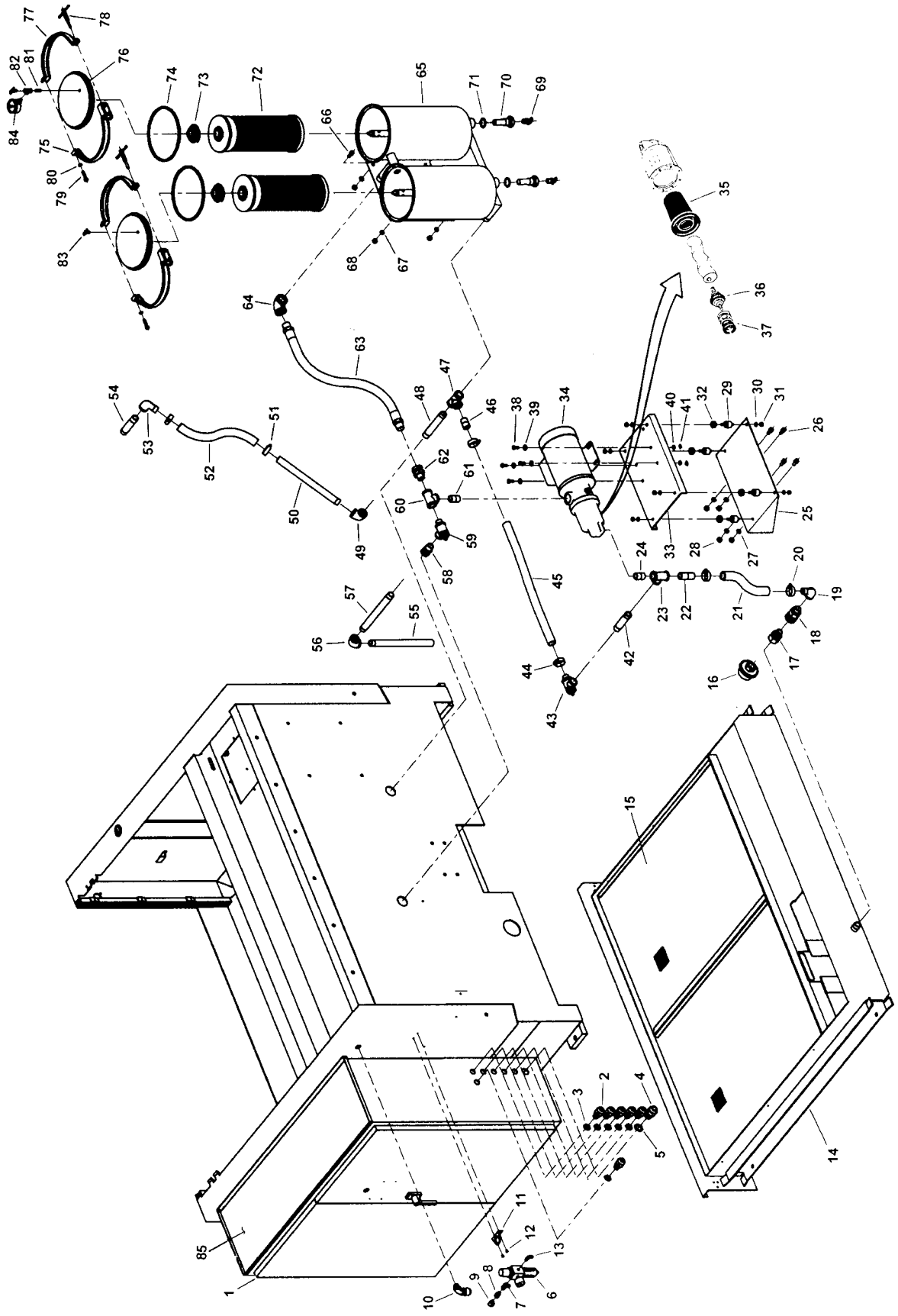

FIGURE G – HYDRAULIC PIPING

PARTS LIST COVERING FIGURE "G"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**CK-5700**	**1**	**....Electrical Enclosure** *(See Fig. H)*
2	**PEC-180A**	**6**	**....Strain Relief Connector** (Pkg. of 1) *with*
3	PEM-302A	1	.....Locknut
4	**PEC-178A**	**1**	**....Strain Relief Connector** *with*
5	PEM-301A	1	.....Locknut
6	**PFC-103A**	**1**	**....Filter Regulator**
7	**PPPM-448A**	**1**	**....Female Universal Elbow**
8	**PPP-477A**	**1**	**....Adapter**
9	**PPP-478A**	**1**	**....Street Elbow**
10	**PEC-220A**	**1**	**....Stain Relief Connector**
11	**PHN-504**	**1**	**....Regulator Bracket**
12	**PHSM-431**	**2**	**....Screw** (M5 x .8 x 8 BHCS)
13	**PPP-439A**	**1**	**....Elbow**
14	**CK-5575**	**1**	**....Reservoir Assembly**
15	**CK-5601**	**2**	**....Non-Splash Screen**
16	**PPP-332A**	**1**	**....Suction Screen**
17	**PPP-489A**	**1**	**....Quick Disconnect Coupler**
18	**PPP-490A**	**1**	**....Quick Disconnect Coupler**
19	**CK-1279A**	**1**	**....Street Elbow**
20	**CK-1292**	**2**	**....Hose Clamp**
21	**PPP-498A**	**1**	**....Intake Hose**
22	**PPP-331A**	**1**	**....Nipple**
23	**PPP-201A**	**1**	**....Tee**
24	**PPP-152A**	**1**	**....Close Nipple**
25	**CK-5589**	**1**	**....Pump Bracket**
26	**PHSM-447**	**4**	**....Screw** (M10 x 1.5 x 20 SHCS)
27	**PHWM-521**	**4**	**....Lockwasher**
28	**PHNM-419**	**4**	**....Nut** (M10 x 1.5)
29	**PF-224A**	**4**	**....Flex Bolt Mounting** (Pkg. of 2)
30	**PHW-119**	**8**	**....Lockwasher**
31	**PHN-222**	**8**	**....Nut** (5/16-18UNC)
32	**CH-376**	**1**	**....Spacer**
33	**PF-1036**	**1**	**....Base**
34	**CK-5721A**	**1**	**....Motor and Pump** (230/460 Volt, 60 HZ.) *includes*
35	CK-5721-1A	1	.....Pump Stator
36	CK-5721-2A	1	.....Pump Connection Joint
37	CK-5721-3A	1	.....Pump Seal
34	**CK-5724A**	**1**	**....Motor and Pump** (380 Volt, 50 HZ.) *includes*
35	CK-5721-1A	1	.....Pump Stator
36	CK-5721-2A	1	.....Pump Connection Joint
37	CK-5721-3A	1	.....Pump Seal
38	**PHS-644**	**4**	**....Screw** (5/16-18UNC x 1 HHCS)
39	**KN-568**	**4**	**....Washer**
40	**PHW-119**	**4**	**....Lockwasher**
41	**PHN-222**	**4**	**....Nut** (5/16-18UNC)
42	**PPP-195A**	**1**	**....Nipple**
43	**PPP-493A**	**1**	**....Low Pressure Relief Valve**
44	**CK-1313**	**2**	**....Hose Clamp**
45	**CK-5737A**	**1**	**....Low Pressure Relief Hose**
46	**PPP-152A**	**1**	**....Close Nipple**
47	**PPP-201A**	**1**	**....Tee**
48	**PPP-333A**	**1**	**....Nipple**
49	**MAN-1079A**	**1**	**....Elbow**
50	**CK-5739A**	**1**	**....Pipe**

N/S indicates Not Shown

(Parts continued on next page)

PARTS LIST COVERING FIGURE "G" cont'd

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
51	**CK-1292**	**2**	**....Hose Clamp**
52	**79730A**	*****	**....Vinyl Tube** (1" I.D.)
53	**CK-1279A**	**1**	**....Street Elbow**
54	**PPP-195A**	**1**	**....Nipple**
55	**CK-5739A**	**1**	**....Elbow**
57	**PPP-491A**	**1**	**....Pipe**
58	**PPP-197A**	**1**	**....Swivel Adapter**
59	**CK-1389A**	**1**	**....Relief Valve**
60	**PPP-201A**	**1**	**....Tee**
61	**PPP-152A**	**1**	**....Close Nipple**
62	**PPP-181A**	**1**	**....Swivel Adapter Union**
63	**PPP-60A**	**1**	**....Hose Assembly**
64	**PPP-150A**	**1**	**....90 Degree Elbow**
65	**CK-5625**	**1**	**....Filter Canister and Bracket Assembly**
66	**PHSM-447**	**4**	**....Screw** (M10 x 1.5 x 20 SHCS)
67	**PHWM-421**	**4**	**....Lockwasher**
68	**PHNM-419**	**4**	**....Nut** (M10 x 1.5)
69	**PF-259**	**2**	**....Drain Cock**
70	**PF-257**	**2**	**....Standpipe**
71	**PF-258**	**2**	**....Washer**
72	**PF-1054**	**1**	**....Filter Elements** (To be ordered per application.)
73	**PF-247A**	**2**	**....Spring Hold Down** (Pkg. of 1)
74	**PF-244A**	**2**	**....Gasket** (Pkg. of 1)
75	**PF-261**	**2**	**....Clamp Yoke**
76	**PF-243**	**2**	**....Cover**
77	**PF-265**	**2**	**....Clamp Assembly**
78	**PF-270**	**2**	**....Tee Handle**
79	**TN-30**	**2**	**....Screw** (5/16-18UNC x 1.5 HHCS)
80	**PHW-119**	**2**	**....Washer**
81	**PPP-184A**	**1**	**....Nipple**
82	**PPP-185A**	**1**	**....Tee**
83	**PF-246**	**2**	**....Air Vent**
84	**CK-5768**	**1**	**....Gage**
N/S	**PPP-520**	**1**	**....Adapter** (1/8 NPT to 1/8 PT)
N/S	**PPPM-445**	**2**	**....Adapter** (50 Hz)
N/S	**CK-5839**	**1**	**....Pump Motor Cable**
85	**CK-5707**	**1**	**....Tray Pad**

N/S indicates Not Shown

NOTES

SECTION II - ELETRICAL COMPONENTS

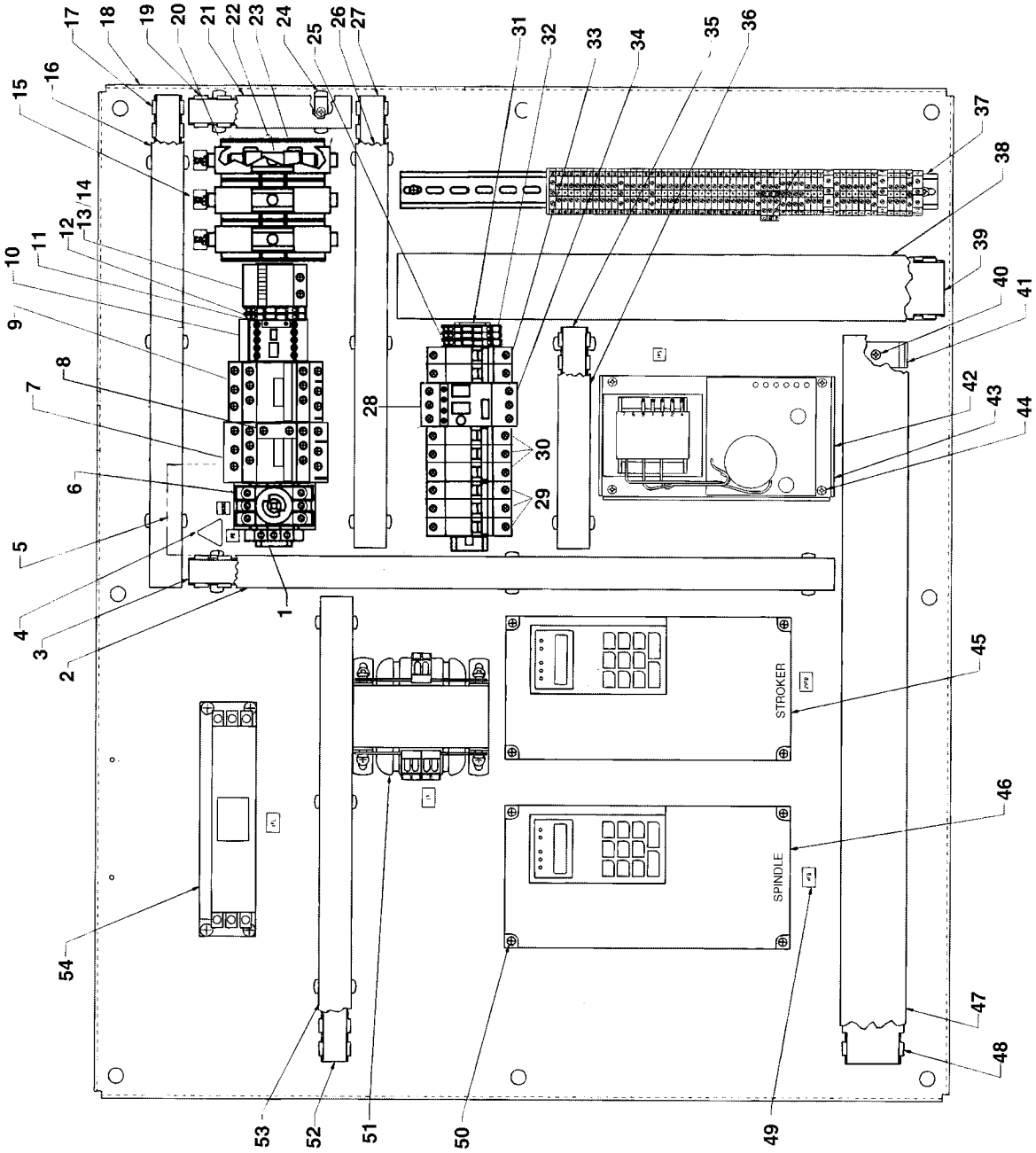

TABLE H-1

FUSE	CK21D	CK21E/CE	CK21G/CG
1, 2, 3FU	PEF137	PEF129	PEF129
4, 5FU	PEF198	PEF179	PEF179
6, 7, 8FU	PEF203	- - -	- - -
9, 10, 11FU	PEF175	PEF135	PEF135
12, 13FU	- - -	PEF178	PEF178
14, 15, 16FU	PEF176	PEF176	PEF176
10L	PES734	PES733	PES733

FIGURE H – ELECTRICAL ENCLOSURE

PARTS LIST COVERING FIGURE "H"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**PET-545**	**1**	**....Ground Terminal**
2	**WCA-0665**	**1**	**....Wiring Duct Cover** (665mm)
3	**WDA-0665**	**1**	**....Wiring Duct** (665mm)
4	**PNP-299**	**1**	**....Electrical Decal**
5	**PNP-508**	**1**	**....Decal** (230 V)
6	**PES-297**	**1**	**....Non-Fused Disconnect Switch**
7	**PES-714**	**1**	**....Contactor** (24V, 32A)
8	**PES-731**	**1**	**....Contact Block**
9	**PES-710**	**1**	**....Contactor**
10	**PES-299**	**1**	**....Control Relay** (24V)
11	**PED-713**	**1**	**....Diode Module**
12	**PEM-675**	**2**	**....Fuseholder**(E, CE, G, CG) *(see Table H-1)*
13	PEF-178	2	.....Fuse (2.5A)(E, CE, G, CG)
14	**PEM-883**	**1**	**....Hour Meter** (24VDC**)**
15	**PEM-153**	**8**	**....Wire & Cable Marking Label**
16	**WCA-0460**	**1**	**....Wiring Duct Cover** (460mm)
17	**WDA-0460**	**1**	**....Wiring Duct** (460mm**)**
18	**CK-5668**	**1**	**....Sub Panel**
19	**WDA-0185**	**1**	**....Wiring Duct** (185mm)
20	**PEM-788**	**3**	**....Fuse Cover** (CG)
21	**WCA-0185**	**1**	**....Wiring Duct Cover** (185mm)
22	**PEM-674**	**1**	**....Fuseblock** (D)
22	**PEM-489**	**1**	**....Fuseblock** (E, CE, G, CG)
23	**PEF-144**	**3**	**....Fuse** (D)
23	**PEF-137**	**3**	**....Fuse** (E, CE, G, CG)
24	**PEM-496**	**11**	**....Duct Mounting Clip**
25	**PEM-675**	**2**	**....Fuseholder** *(see Table H-1)*
26	**WCA-0430**	**1**	**....Wiring Duct Cover** (430mm)
27	**WDA-0430**	**1**	**....Wiring Duct** (430mm)
28	**PES-734**	**1**	**....Manual Motor Starter Protector** (D)
28	**PES-733**	**1**	**....Manual Motor Starter Protector** (E, CE, G, CG)
29	**PEM-755**	**3**	**....Fuseholder** (Ultrasafe Class CC)*(see Table H-1)*
30	**PEM-755**	**3**	**....Fuseholder** (Ultrasafe Class CC)*(see Table H-1)*
31	**DRB-0210**	**1**	**....Din Rail** (210mm)
32	**PEM-675**	**1**	**....Fuseholder** *(see Table H-1)*
33	**PEM-755**	**1**	**....Fuseholder** (Ultrasafe Class CC)*(see Table H-1)*
34	**PES-741**	**1**	**....Aux. Contact** *(see Table H-1)*
35	**WDA-0200**	**1**	**....Wiring Duct** (200mm)
36	**WCA-0200**	**1**	**....Wiring Duct Cover** (200mm)
37	**CK-5671**	**1**	**....Terminal Assembly**
38	**WCB-0530**	**1**	**....Wiring Duct Cover** (530mm)
39	**WDB-0530**	**1**	**....Wiring Duct** (530mm)
40	**PHSM-440**	**19**	**....Screw** (M4 x 0,7 x 12mm PPHTC)
41	**PEM-246**	**6**	**....Wire Duct Clip**
42	**PED-2014**	**1**	**....Power Supply** (24V, 4.8A)
43	**EC-3004**	**4**	**....Spacer**
44	**PHSM-583**	**4**	**....Screw** (M4 x 0,7 x 25mm PPHTC)
45	**CK-5634**	**1**	**....Programmed Stroker Drive** (3/4 Hp 230V Variable Freq.)(D)
45	**CK-5637**	**1**	**....Programmed Stroker Drive** (3/4 Hp 230V Variable Freq.)(E, CE)

N/S indicates Not Shown

(Parts continued on next page)

PARTS LIST COVERING FIGURE "H" cont'd

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
45	**CK-5639**	**1**	**....Programmed Stroker Drive** (3/4 Hp 230V Variable Freq.)(G, CG)
46	**CK-5633**	**1**	**....Programmed Spindle Drive** (5 Hp 230V Variable Freq.)(D)
46	**CK-5636**	**1**	**....Programmed Spindle Drive** (5 Hp 230V Variable Freq.)(E, CE)
46	**CK-5638**	**1**	**....Programmed Spindle Drive** (5 Hp 230V Variable Freq.)(G, CG)
47	**WCB-0700**	**1**	**....Wiring Duct Cover** (700mm)
48	**WDB-0700**	**1**	**....Wiring Duct** (700mm)
49	**PEM-154**	**16**	**....Wire & Cable Marking Label**
50	**PHSM-438**	**16**	**....Screw** (M5 x 0,8 x 12mm PPHTC)
51	**PEM-556**	**1**	**....Control Transformer** (E, CE, G, CG)
52	**WDA-0490**	**1**	**....Wiring Duct** (E, CE, G, CG)
53	**WCA-0490**	**1**	**....Wiring Duct Cover** (E, CE, G, CG)
54	**PED-2145**	**1**	**....AC Line Filter** (D)

N/S indicates Not Shown

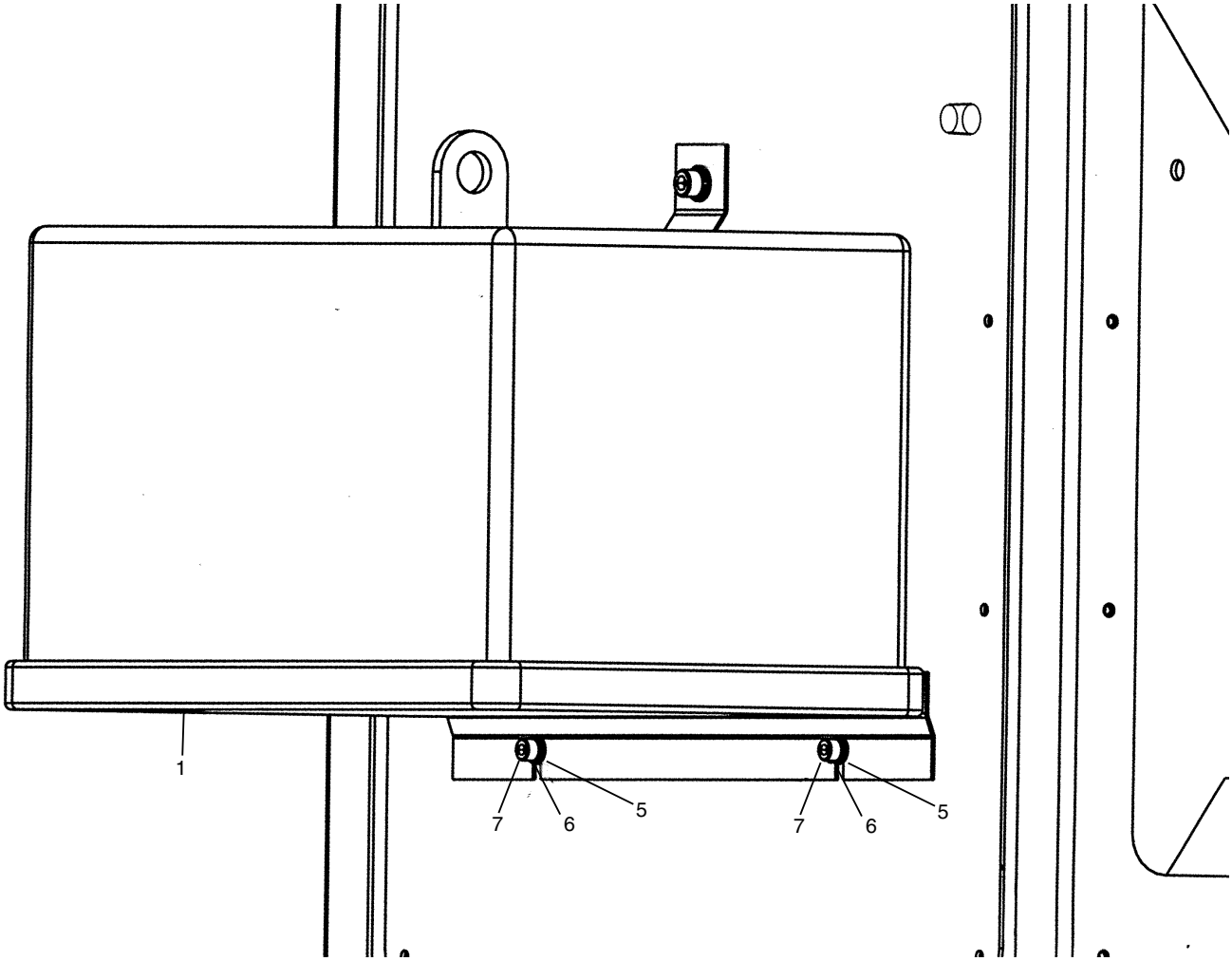

FIGURE I – TRANSFORMER KIT

PARTS LIST COVERING FIGURE "I"

ITEM NO.	**ORDER BY PART NUMBER**	QTY.	DESCRIPTION
-	**PEM-1083A**	**Ref.**	**....Transformer Kit** *includes*
1	PEM-1083	1	.....Transformer (15Kva)
2	PHWM-531	1	.....Flatwasher (M10)
3	PHWM-521	1	.....Lockwasher (M10)
4	PHSM-447	1	.....Screw (M10 x 1,5 x 20mm SHCS)
5	PHWM-501	2	.....Flatwasher (M8)
6	PHWM-407	2	.....Lockwasher (M8)
7	PHSM-965	2	.....Screw (M8 x 1,25 x 20mm SHCS)

N/S indicates Not Shown

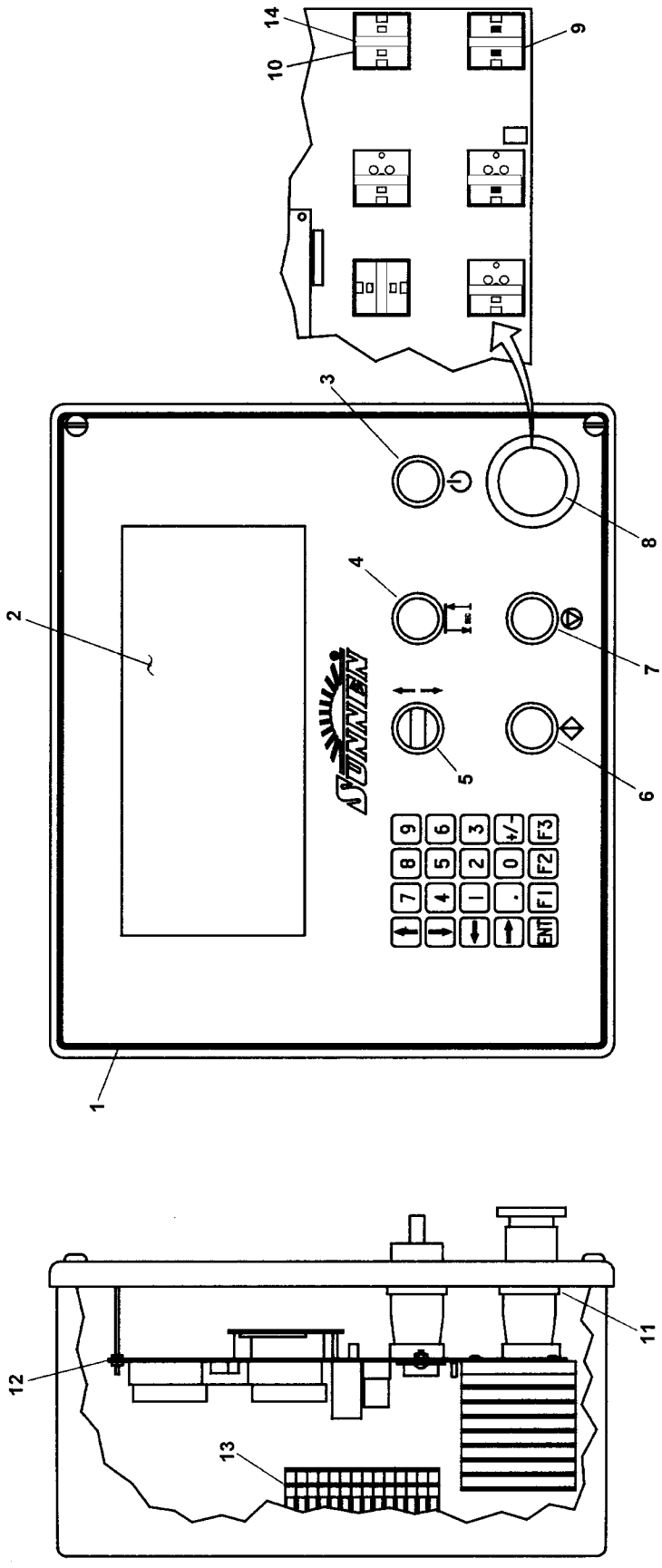

FIGURE J – OPERATOR STATION

PARTS LIST COVERING FIGURE "J"

ITEM NO.	ORDER BY PART NUMBER	QTY.	DESCRIPTION
1	**PNP-412A**	**1**	**....Legend Plate** *with* Keypad
2	**PED-3004A**	**1**	**....LCD Display**
3	**PES-662**	**1**	**....White Operator**
4	**PEM-967**	**1**	**....Blue Switch**
-	PES-660	1	.....Switch Operator
5	**PES-658**	**1**	**....3 Position Selector**
6	**PEM-966**	**1**	**....Green Operator**
-	PES-660	1	.....Switch Operator
7	**PEM-968**	**1**	**....Red Operator**
-	PES-660	1	.....Switch Operator
8	**PES-661**	**1**	**....Red Mushroom Operator**
9	**PES-647**	**3**	**....Contact Block - NC** (Pkg. of 1)
10	**PES-646**	**6**	**....Contact Block - NO** (Pkg. of 1)
11	**PEM-974**	**6**	**....Mounting Collar** (Pkg. of 1)
12	**PED-1064A**	**1**	**....Control Circuit Board** (Prior to sn1117)
12	**PED-1079A**	**1**	**....Control Circuit Board** (sn1117 to 1159)
12	**PED-1079-56A**	**1**	**....Control C/B** (sn1117 to 1159 w/opt 56 installed)
12	**PED-1098A**	**1**	**....Control Circuit Board** (sn1160 to 12xx)
12	**PED-1098-56A**	**1**	**....Control C/B** (sn1160 to 12xx w/opt 56 installed)
12	**PED-2134A**	**1**	**....Control Circuit Board** (sn12xx & up)
12	**PED-2134-56A**	**1**	**....Control Circuit Board** (sn12xx & up w/opt 56 installed)
13	**CK-5657A**	**1**	**....Operator Station Terminal Block**
14	**PEM-972**	**1**	**....White LED Module**
N/S	**CK-5656A**	**1**	**....Gasket**
N/S	**CBL-260A**	**1**	**....Solenoid Cable Assembly**
N/S	**CBL-261A**	**1**	**....Switch Cable Assembly**
N/S	**PEF-210A**	**1**	**....Subminiature Fuse, 2A**

N/S indicates Not Shown

Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow the instructions for the operation of the equipment.

FRACTION / DECIMAL / MILLIMETER EQUIVALENTS CHART

INCH FRACTION	INCH DECIMAL	MILLIMETER	INCH FRACTION	INCH DECIMAL	MILLIMETER	INCH FRACTION	INCH DECIMAL	MILLIMETER
. . . .	.003937	0,1000	9/32	.281250	7,1438	21/32	.656250	16,6688
. . . .	.007874	0,2000	19/64	.296875	7,5406	. . . .	.669291	17,0000
. . . .	.011811	0,3000	5/16	.312500	7,9375	43/64	.671875	17,0656
1/64	.015625	0,3969	. . . .	.314961	8,0000	11/16	.687500	17,4625
. . . .	.015748	0,4000	21/64	.328125	8,3344	45/64	.703125	17,8594
. . . .	.019685	0,5000	11/32	.343750	8,7313	. . . .	.708661	18,0000
. . . .	.023622	0,6000	. . . .	.354331	9,0000	23/32	.718750	18,2563
. . . .	.027559	0,7000	23/64	.359375	9,1281	47/64	.734375	18,6531
1/32	.031250	0,7938	3/8	.375000	9,5250	. . . .	.748031	19,0000
. . . .	.031496	0,8000	25/64	.390625	9,9219	3/4	.750000	19,0500
. . . .	.035433	0,9000	. . . .	.393701	10,0000	49/64	.765625	19,4469
. . . .	.039370	1,0000	13/32	.406250	10,3188	25/32	.781250	19,8438
3/64	.046875	1,1906	27/64	.421875	10,7156	. . . .	.787402	20,0000
1/16	.062500	1,5875	. . . .	.433071	11,0000	51/64	.796875	20,2406
5/64	.078125	1,9844	7/16	.437500	11,1125	13/16	.812500	20,6375
. . . .	.078740	2,0000	29/64	.453125	11,5094	. . . .	.826772	21,0000
3/32	.093750	2,3813	15/32	.468750	11,9063	53/64	.828125	21,0344
7/64	.109375	2,7781	. . . .	.472441	12,0000	27/32	.843750	21,4313
. . . .	.118110	3,0000	31/64	.484375	12,3031	55/64	.859375	21,8281
1/8	.125000	3,1750	1/2	.500000	12,7000	. . . .	.866142	22,0000
9/64	.140625	3,5719	. . . .	.511811	13,0000	7/8	.875000	22,2250
5/32	.156250	3,9688	33/64	.515625	13,0969	57/64	.890625	22,6219
. . . .	.157480	4,0000	17/32	.531250	13,4938	. . . .	.905512	23,0000
11/64	.171875	4,3656	35/64	.546875	13,8906	29/32	.906250	23,0188
3/16	.187500	4,7625	. . . .	.551181	14,0000	59/64	.921875	23,4156
. . . .	.196850	5,0000	9/16	.562500	14,2875	15/16	.937500	23,8125
13/64	.203125	5,1594	37/64	.578125	14,6844	. . . .	.944882	24,0000
7/32	.218750	5,5563	. . . .	.590551	15,0000	61/64	.953125	24,2094
15/64	.234375	5,9531	19/32	.593750	15,0813	31/32	.968750	24,6063
. . . .	.236220	6,0000	39/64	.609375	15,4781	. . . .	.984252	25,0000
1/4	.250000	6,3500	5/8	.625000	15,8750	63/64	.984375	25,0031
17/64	.265625	6,7469	. . . .	.629921	16,0000	1	1.000000	25,4000
. . . .	.275591	7,0000	41/64	.640625	16,2719	1-1/16	1.062500	26,9880

FORMULAS:

MULTIPLY		BY		TO GET
INCHES (in)	x	25.4	=	MILLIMETERS (mm)
FEET (ft)	x	0.3048	=	METERS (m)

MULTIPLY		BY		TO GET
MILLIMETERS (mm)	x	0.03937	=	INCHES (in)
METERS (m)	x	3.281	=	FEET (ft)

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